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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,448	12/13/2005	Alexandre J Bourret	36-1949	6549
23117 7590 04/28/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
TRAN, TRANG U				
ART UNIT		PAPER NUMBER		
2622				
MAIL DATE		DELIVERY MODE		
04/28/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/560,448

Applicant(s)

BOURRET ET AL.

Examiner

Trang U. Tran

Art Unit

2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 5 and 24 are objected to because of the following informalities: "the spatial extent" should change to --the spatial bounded--. Appropriate correction is required.

Claim Rejections - 35 USC § 101

2. 35 U.S.C. 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.
3. Claims 1-16 are rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. Supreme Court precedent¹ and recent Federal Circuit decisions² indicate that a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a particular apparatus), or (2) transform underlying subject matter (such as an article or material) to a different state or thing. While the instant claim recites a series of steps or acts to be performed, the claim neither transforms underlying subject matter nor positively ties to another statutory category that accomplishes the claimed method steps, and therefore does not qualify as a statutory process. For example the method for processing an information including steps of matching and generating is of sufficient breadth that it would be reasonably interpreted as a series of steps completely performed mentally, verbally or without a machine. **The Applicant has provided no explicit and deliberate definitions of**

¹ *Diamond v. Diehr*, 450 U.S. 175, 184 (1981); *Parker v. Flook*, 437 U.S. 584, 588 n.9 (1978); *Gottschalk v. Benson*, 409 U.S. 63, 70 (1972); *Cochrane v. Deener*, 94 U.S. 780, 787-88 (1876).

² *In re Bilski*, 88 USPQ2d 1385 (Fed. Cir. 2008).

"matching", or "generating" to limit the steps of processing the information with a machine. *In re Bilski*. These steps of claims 1-16 are performed without a machine.

4. Claim 17 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 17 defines a computer program or suite of programs embodying function description material. However, the claimed does not define a computer-readable medium or memory and is thus non-statutory for that reason (i.e., "when functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be realized"- Guidelines Annex IV). That is, the scope of the presently claimed a computer program or suite of programs can range from paper on which the program is written, to a program simply contemplated and memorized by a person.

5. Claim 18 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claim 18 drawn to A "modulated carrier signal incorporating data corresponding to the computer program" embodying functional descriptive material is neither a process nor a product (i.e., a tangible "thing") and therefore does not fall within one of the four statutory classes of § 101. Rather, "modulated carrier signal" is a form of energy, in the absence of any physical structure or tangible material.

Because the full scope of the claim as properly read in light of the disclosure encompasses non-statutory subject matter, the claim as a whole is non-statutory. The examiner suggests amending the claim to excluding the intangible media such as signals, modulated carrier signal, etc. Any amendment to the claim should be commensurate with its corresponding disclosure.

Claim Rejections – 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6 and 17-25 are rejected under 35 U.S.C. 102(b) as being anticipate by Kuhn (US Patent No. 6,295,083 B1).

In considering claim 1, Kuhn discloses all the claimed subject matter, note 1) the claimed matching sub-field/frame elements of a test video field/frame with corresponding sub-field/frame elements of at least one reference video field/frame is met by the cross-correlations which is matching between the test image and the reference image (Figs 1-2, col. 2, line 25 to col. 3, line 59), and 2) the claimed generating a video quality value in dependence on the matched sub-field/frame elements of the test and reference video fields/frames is met by the Picture Quality Analysis System PQA200 (Figs 1-2, col. 2, line 25-55).

In considering claim 2, the claimed wherein the matching step further comprises, for a sub-field/frame element of the test video field/frame, searching for a matching sub-

field/frame element within M1 preceding and/or M2 succeeding reference video fields/frames to a temporally corresponding reference video field/frame to the test video field/frame is met by the cross-correlations which is matching the alignment pattern may be (seven lines in height with alternate black and white blocks) between the test image and the reference image (Figs 1-2, col. 2, line 25 to col. 3, line 59).

In considering claim 3, the claimed wherein M1 and M2 are predefined is met by the cross-correlations which is matching the alignment pattern may be (seven lines in height with alternate black and white blocks) between the test image and the reference image (Figs 1-2, col. 2, line 25 to col. 3, line 59).

In considering claim 4, the claimed wherein the searching step further comprises searching within a spatially bounded region of the reference video fields/frames about the corresponding position within the reference fields/frames as the test sub-field/frame element takes within the test video field/frame is met by the cross-correlations which is matching the alignment pattern may be (seven lines in height with alternate black and white blocks) between the test image and the reference image (Figs 1-2, col. 2, line 25 to col. 3, line 59).

In considering claim 5, the claimed wherein the spatial extent of the search region is predefined is met by the cross-correlations which is matching the alignment pattern may be (seven lines in height with alternate black and white blocks) between the test image and the reference image (Figs 1-2, col. 2, line 25 to col. 3, line 59).

In considering claim 6, the claimed wherein the matching step further comprises, for a sub-field/frame element of the test video field/frame: defining a matching template

comprising a portion of the test video field/frame including the sub-field/frame element; and using the defined matching template to search for matching sub-field/frame elements in the at least one reference video field/frame is met by the cross-correlations which is matching the alignment pattern may be (seven lines in height with alternate black and white blocks) between the test image and the reference image (Figs 1-2, col. 2, line 25 to col. 3, line 59).

Claim 17 is rejected for the same reason as discussed in claim 1 above.

Claim 18 is rejected for the same reason as discussed in claim 1 above.

Claim 19 is rejected for the same reason as discussed in claim 1 above.

Claims 20-25 are rejected for the same reason as discussed in claims 1-6, respectively.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 7-16 and 26-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuhn (US Patent No. 6,295,083 B1) in view of Wolf et al. (US Patent No. 5,446,492).

In considering claim 7, Kuhn discloses all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed wherein the matching step further comprises calculating one or more matching statistic values and/or

matching vectors; and wherein the generating step generates the video quality parameter in further dependence on the calculated matching statistic values and/or matching vectors. Wolf et al teach that the source and destination spatial statistics processors 22 and 30 compute the standard deviation of the pixel contained within the Region Of Interest (ROI) for which the video quality is to be measured, the ROI may be the entire image, but preferably it is a small subset of the pixels forming the entire image (Fig. 2, col. 6, line 3 to col. 8, line 38). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the calculating statistic value as taught by Wolf et al into Kuhn's system in order to provide a method of measuring video quality that agrees closely with the perceptual video quality obtained from large panel of human viewers.

In considering claim 8, the claimed wherein the calculating step comprises: constructing one or more histograms relating to the searched area (s) of the reference video field (s)/frame (s); and calculating a matching statistic value for each histogram relating to the proportion of matched elements which contribute to the peak of the histogram is met by the source and destination spatial statistics processors 22 and 30 compute the standard deviation of the pixel contained within the Region Of Interest (ROI) for which the video quality is to be measured, the ROI may be the entire image, but preferably it is a small subset of the pixels forming the entire image (Fig. 2, col. 6, line 3 to col. 8, line 38 of Wolf et al).

In considering claim 9, Kuhn discloses all the limitations of the instant invention as discussed in claim 1 above, except for providing the claimed wherein the generating

step further comprises: calculating a plurality of video characteristic values respectively relating to characteristics of the test and/or reference video fields/frames in dependence on the matched sub-field/frame elements of the test and reference video fields/frames; and integrating at least the calculated video characteristic values together to give the video quality value. Wolf et al teach that the source features 7 and the destination features 9 are used by the quality processor 35 to compute a set of quality parameters 13 (p_1, p_2, \dots) and quality score parameter 14 (q), ...the design process determines the internal operation of the statistics processors 22, 24, 30, 32 and the quality processor 35 (Fig. 2, col. 4, line 8 to col. 5, line 38). Therefore, it would have been obvious to one ordinary skill in the art at the time of the invention to incorporate the calculating plurality of the video characteristic values as taught by Wolf et al into Kuhn's system in order to provide a method of measuring video quality that agrees closely with the perceptual video quality obtained from large panel of human viewers.

Claim 10 is rejected for the same reason as discussed in claim 7 above.

In considering claim 11, the claimed wherein the video characteristic values are respectively any two or more of the following values: one or more spatial frequency values; one or more texture values; at least one edge value; at least one luminance signal to noise ratio value; and/or one or more chrominance signal to noise ratio values is met by the edge values (Figs. 1C and 1D, col. 3, line 5 to col. 4, line 3 of Kuhn).

In considering claim 12, the claimed wherein the calculation of the edge value comprises, for a test field/frame: counting a number of edges in each sub-field/frame element of the test field/frame; counting a number of edges in each sub-field/frame

element of the at least one reference field/frame matched to the sub-field/frame elements of the test field/frame; and determining an edge value for the test field/frame in dependence on the respective counts is met by the buffer register stores the values of a group of pixels surrounding both the rising and falling edges of the alignment blocks (Figs. 1C and 1D, col. 3, line 5 to col. 4, line 3 of Kuhn).

In considering claim 13, the claimed wherein the determining step further comprises: calculating difference values between each pair of respective counts; putting each calculated difference value to the power Q ; summing the resulting values to give a sum value; and putting the sum value to the power $1/Q$ to give the edge value is met by calculating the different between the pixel and the pixel shift (Figs. 1C and 1D, col. 3, line 5 to col. 4, line 3 of Kuhn).

In considering claim 14, the claimed wherein the integrating step further comprises weighting each value by a predetermined weighting factor; and summing the weighted values to give the video quality value is met by the shifting of the image is performed by interpolation using an appropriate filter such as a linear or $\sin x/x$ filter (Fig. 3, col. 4, lines 4-64 of Kuhn).

In considering claim 15, the claimed wherein the summing step is further arranged to sum the weighted values with a predetermined offset value is met by the shifting of the image is performed by interpolation using an appropriate filter such as a linear or $\sin x/x$ filter (Fig. 3, col. 4, lines 4-64 of Kuhn).

In considering claim 16, the claimed wherein the weighting factors and the offset value are dependent on the type of the test and reference video fields/frames is met by

the shifting of the image is performed by interpolation using an appropriate filter such as a linear or sinc/x filter (Fig. 3, col. 4, lines 4-64 of Kuhn).

Claims 26-35 are rejected for the same reason as discussed in claims 7-16, respectively.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ferguson (US Patent No. 6,678,424 B1) discloses real time human vision system behavior modeling.

Janko et al. (US Patent No. 6,795,580 B1) disclose picture quality measuring using blockiness.

Myler et al. (US Patent No. 6,577,764 B2) disclose method for measuring and analyzing digital video quality.

Isnardi et al. (US Patent No. 6,400,400 B1) disclose method and apparatus for automated testing for a video decoder.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trang U. Tran whose telephone number is (571) 272-7358. The examiner can normally be reached on 9:00 AM - 6:30 PM, Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lin Ye can be reached on (571) 272-7372. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

April 21, 2009

/Trang U. Tran/
Primary Examiner, Art Unit 2622